

$^{27}\text{Si } \varepsilon \text{ decay }$ **1985Da04,1974Ma41,1971De05**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 112, 1875 (2011)		30-Nov-2010

Parent: ^{27}Si : E=0.0; $J^\pi=5/2^+$; $T_{1/2}=4.16$ s 4; $Q(\varepsilon)=4812.36$ 10; % $\varepsilon+\beta^+$ decay=100.0

Other: [1971Be58](#).

[1985Da04](#): ^{27}Si produced from $^{27}\text{Al}(p,n)$, E=9 MeV, reaction, Compton suppressed Ge(Li), HPGe, NaI detectors; Measured: E_γ , I_γ , deduced weak feeding branches to ^{27}Al excited levels.

[1974Ma41](#): ^{27}Si produced from $^{27}\text{Al}(p,n)$, E=10 MeV, reaction, Ge(Li) detector; Measured E_γ , I_γ , deduced weak feeding branches to ^{27}Al levels and absolute γ -ray feeding intensity to the 2210 keV level.

[1971De05](#): ^{27}Si produced from $^{27}\text{Al}(p,n)$ reaction, Ge(Li) detector, measured E_γ , I_γ , deduced upper limits for the γ -ray feeding intensity to ^{27}Al excited levels.

 ^{27}Al Levels

E(level) [†]	$J^\pi\ddagger$
0.0	$5/2^+$
843.77 10	$1/2^+$
1014.54 10	$3/2^+$
2212.11 10	($7/2^+$)
2734.9 6	$5/2^+$
2982.18 5	$3/2^+$
3004.2 9	($9/2^+$)

[†] From a least-squares fit to γ -ray energies.

[‡] From Adopted Levels.

 ε, β^+ radiations

E(decay)	E(level)	$I\beta^+ \dagger$	$I\varepsilon \dagger$	Log ft	$I(\varepsilon+\beta^+) \dagger$	Comments
(1808.2 9)	3004.2	<0.0005	< 4×10^{-5}	>6.0	<0.0005	av $E\beta=319.92$ 39; $\varepsilon K=0.06825$ 24; $\varepsilon L=0.006061$ 21; $\varepsilon M+=0.0004858$ 1 $I(\varepsilon+\beta^+)$ from 1985Da04 .
(1830.18 11)	2982.18	0.024 12	0.0018 9	4.34 22	0.026 13	av $E\beta=329.357$ 48; $\varepsilon K=0.06285$ 3; $\varepsilon L=0.005581$ 3; $\varepsilon M+=0.0004473$ 2 $I(\varepsilon+\beta^+)$ from weighted av. of data from 1985Da04 , 1974Ma41 and 1971De05 .
(2077.5 6)	2734.9	0.016 13	0.0005 4	5.0 4	0.017 13	av $E\beta=436.87$ 27; $\varepsilon K=0.02799$ 5; $\varepsilon L=0.002485$ 5; $\varepsilon M+=0.0001992$ 4 $I(\varepsilon+\beta^+)$ weighted av. of data from 1985Da04 and 1974Ma41 .
(2600.25 14)	2212.11	0.178 13	0.00162 12	4.69 4	0.180 13	av $E\beta=671.54$; $\varepsilon K=0.008212$ 3; $\varepsilon L=0.0007289$ 2; $\varepsilon M+=5.842 \times 10^{-5}$ 2 $I(\varepsilon+\beta^+)$ from 1974Ma41 .
(3797.82 14)	1014.54	0.0060 8	9.9×10^{-6} 13	7.23 6	0.0060 8	av $E\beta=1232.29$; $\varepsilon K=0.0015015$ 3; $\varepsilon L=0.0001332$; $\varepsilon M+=1.0678 \times 10^{-5}$ 2 $I(\varepsilon+\beta^+)$ weighted av. of data from 1985Da04 and 1974Ma41 .
(3968.59 14)	843.77	<0.010	< 1×10^{-5}	>7.1	<0.01	av $E\beta=1313.81$; $\varepsilon K=0.0012565$ 2; $\varepsilon L=0.0001115$; $\varepsilon M+=8.935 \times 10^{-6}$ 2 $I(\varepsilon+\beta^+)$ weighted av. of data from 1985Da04 and 1974Ma41 .
(4812.36 10)	0.0	<99.71	<0.0649	>3.6	<99.77	av $E\beta=1720.13$; $\varepsilon K=0.0005938$;

Continued on next page (footnotes at end of table)

$^{27}\text{Si } \varepsilon$ decay 1985Da04, 1974Ma41, 1971De05 (continued) ε, β^+ radiations (continued)

E(decay)	E(level)	Comments				
$\varepsilon L = 5.268 \times 10^{-5}$; $\varepsilon M+ = 4.222 \times 10^{-6}$ I($\varepsilon + \beta^+$) calculated by the evaluator.						

[†] Absolute intensity per 100 decays.

 $\gamma(^{27}\text{Al})$

E_γ [†]	I_γ ^{‡#}	E_i (level)	J_i^π	E_f	J_f^π	Mult. [†]	δ [†]
170.82 [@] 10	≈0.009	1014.54	3/2 ⁺	843.77	1/2 ⁺	M1+E2	+0.05 6
843.76 10	<0.004	843.77	1/2 ⁺	0.0	5/2 ⁺	(E2)	
1014.52 10	≈0.02	1014.54	3/2 ⁺	0.0	5/2 ⁺	M1+E2	-0.351 12
1720.3 8	≈0.013	2734.9	5/2 ⁺	1014.54	3/2 ⁺	M1+E2	+0.115 8
2212.01 10	0.180 13	2212.11	(7/2 ⁺)	0.0	5/2 ⁺	M1+E2	+0.468 9
2734.7 8	≈0.004	2734.9	5/2 ⁺	0.0	5/2 ⁺	D+Q	+0.19 3
2982.00 5	0.026 13	2982.18	3/2 ⁺	0.0	5/2 ⁺	D+Q	-0.01 1
3004.0 9	<0.001	3004.2	(9/2 ⁺)	0.0	5/2 ⁺		

[†] From Adopted Gammas.

[‡] Deduced by the evaluator based on β^- feedings (γ -ray intensities are not presented in 1985Da04, 1974Ma41, 1971De05).

Absolute intensity per 100 decays.

@ Placement of transition in the level scheme is uncertain.

$^{27}\text{Si} \epsilon$ decay 1985Da04,1974Ma41,1971De05

